Autodesk®
Visual Effects, Finishing, and
Color Grading

HP® xw8600 Workstation Hardware Setup Guide

Autodesk®

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Contents

Chapter 1 Introduction 1

About This Guide 1
Related Documentation 1
Notation Conventions 2
Contacting Customer Support 2

Chapter 2 Getting Started 3

Workflow for Hardware Setup and Application Installation 3
Typical Configuration Overview for Autodesk Effects and Finishing Applications 4
Typical Configuration Overview for Autodesk Lustre 5
Hardware Configuration Guidelines 6
Memory Requirements 6
Ensuring Proper Environmental Conditions 6
Power and Air Conditioning Requirements 6
Rack Mount Requirements 7
Avoiding Damage from Static Electricity 8
Grounding Audio Hardware Components 8
Receiving Your Shipment 8
BIOS and Firmware 8
System BIOS 8
AJA OEM-2K PCI-X Firmware 10

Chapter 3 Connecting Peripherals 13

Workflow for Connecting Peripherals 13
Connecting the Monitor 14
Connecting the Keyboard, Mouse, and Tablet 14
Connecting the Monitor Calibration Device 15
Network Connections 15
Connecting to Gigabit Ethernet (GigE) Networks 15
4-Port Broadcom Adapter 16
Integrated Network Adapter for Lustre 16

Connecting to the InfiniBand (IB) Network . . . 16
Connecting Storage . . . 16
Connecting and Configuring the ATTO Fibre Channel Adapter . . . 17
Connecting Archive Storage . . . 17
Configuring the Archiving Device . . . 17
Connecting the Autodesk Control Surface . . . 18
Configuring the Autodesk Control Surface . . . 20
Assigning an IP Address to the Autodesk Control Surface . . . 20
Configuring the init.config File for the Autodesk Control Surface . . . 22
Connecting the Slave Renderer to a Lustre Workstation . . . 22

Chapter 4 Setting Up Video Hardware . . . 25
Video Hardware Components . . . 25
Wiring Your Video Components . . . 26
Standard VTR Control Cable Pinouts . . . 27
Setting Up VTR Emulation . . . 28
VTR Emulation RS-422 Control Cables . . . 29

Chapter 5 Setting Up Audio Hardware . . . 31
About Audio . . . 31
Audio Wiring Workflow . . . 31
Audio Hardware Components . . . 32
Audio Wiring . . . 32
Configuring the Lucid ADA 88192 Converter . . . 33
Understanding Remote vs. Local Control of the Lucid Converter . . . 33
Adjusting Lucid ADA 88192 Converter Settings . . . 34
Lucid ADA 88192 Converter Settings for Remote Control . . . 35
Lucid ADA 88192 Converter Settings for Local Control . . . 35
Audio Keywords in the Visual Effects and Finishing Configuration File . . . 36

Index . . . 37

Introduction 1

Topics in this chapter:

- About This Guide on page 1
- Related Documentation on page 1
- Notation Conventions on page 2
- Contacting Customer Support on page 2

About This Guide

This guide describes how to set up the HP® xw8600 workstation for your Autodesk® Visual Effects, Finishing, and Colour Grading application (Autodesk® Inferno®, and Autodesk® Flame®, Autodesk® Flint®, Autodesk® Smoke®, Autodesk® Backdraft® Conform, Autodesk® Lustre ®).

NOTE In most cases, both hardware setup and application installation is done on delivery by an authorized technician, so you may not need to perform some of the procedures in these guides.

Related Documentation

This release has documentation that helps you install, configure, and use the software. The documentation is available from your application CD (Lustre only), on the Autodesk Web site, and is installed with the product (as PDF files and as an HTML help system).

Use this guide in conjunction with the *Autodesk Visual Effects and Finishing Software Installation Guide*, the *Autodesk Visual Effects and Finishing Configuration File Reference Guide*, the *Autodesk Stone Direct Configuration Guide*, the *Autodesk Stone and Wire Filesystem and Networking Guide*, the *Autodesk Lustre 2009 Software Installation Guide for Linux Workstations*, the *Autodesk Lustre 2009 Software Installation Guide for Windows Workstations*, the *Autodesk Incinerator 2009 Installation and User Guide*, and the *Autodesk Control Surface User Guide* to install and configure the hardware and software components of your Visual Effects, Finishing, and Colour Grading systems.

For a list of all the documentation available, visit *http://www.autodesk.com/me-documentation*. From this page you can access the complete documentation library.

You should also refer to your product's release notes for all late-breaking release information.

Notation Conventions

A number of style conventions are used throughout this guide. These conventions and examples of their use are shown as follows.

Convention	Example
Text that you enter in a command line or shell appears in Courier bold. You must press the Enter key after each command.	**`rpm -qa`**
Variable names appear in Courier, enclosed in angle brackets.	`<filename>`
Variables that appear enclosed in square brackets are optional.	`[<filename>]`
Feedback from the command line or shell appears in Courier.	`limit coredumpsize`
Directory names, filenames, URLs, and command line utilities appear in italics.	*/usr/discreet*

Contacting Customer Support

For Autodesk Media and Entertainment Customer Support, visit *http://www.autodesk.com/support*.

Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database at *http://www.autodesk.com/resellers*.

Getting Started 2

Topics in this chapter:

- Workflow for Hardware Setup and Application Installation on page 3
- Typical Configuration Overview for Autodesk Effects and Finishing Applications on page 4
- Typical Configuration Overview for Autodesk Lustre on page 5
- Hardware Configuration Guidelines on page 6
- BIOS and Firmware on page 8

Workflow for Hardware Setup and Application Installation

The following procedure provides the general workflow for installing an Autodesk Visual Effects, Finishing, and Colour Grading application on a workstation.

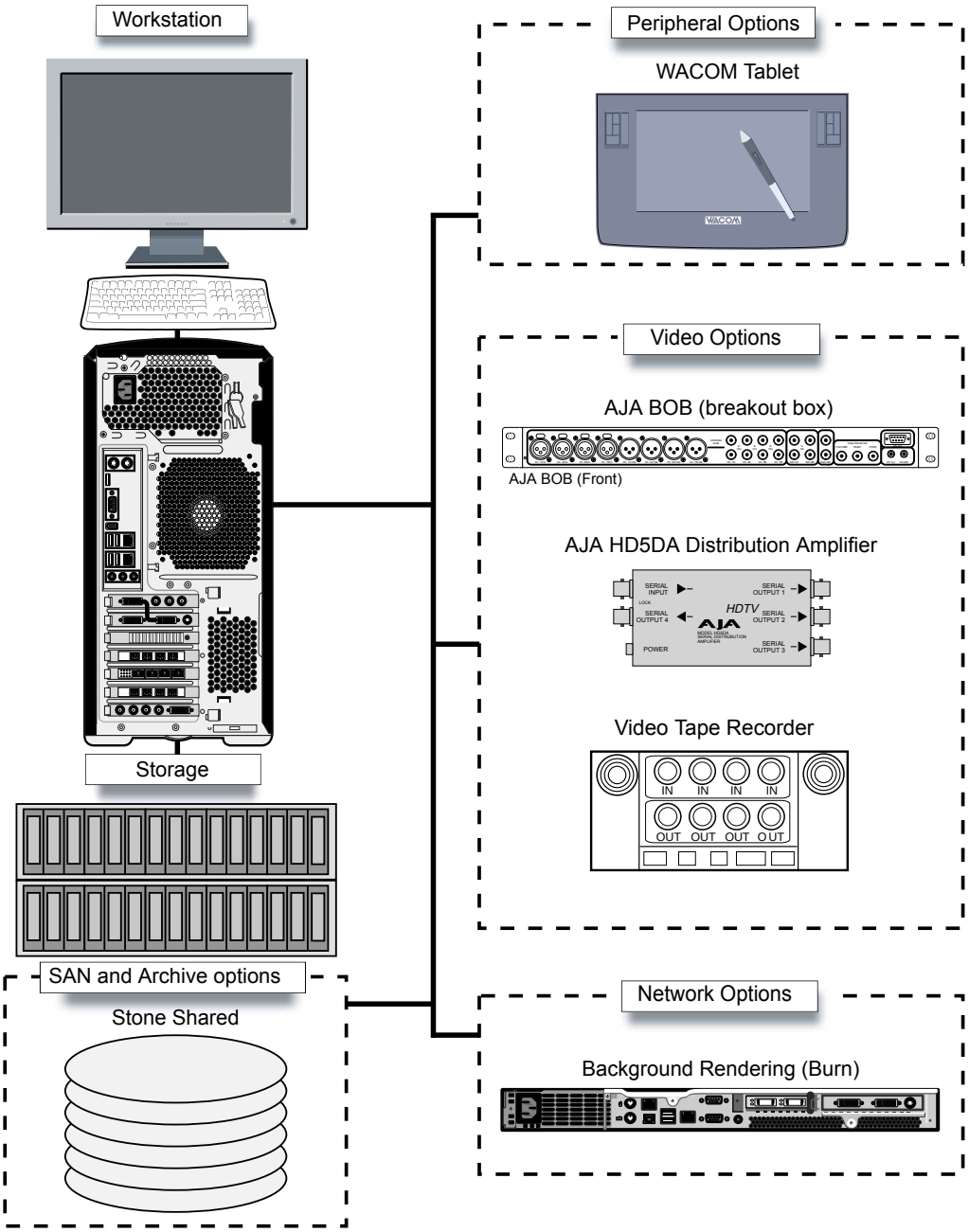
To install a Visual Effects, Finishing, and Colour Grading application on a workstation:

1. Review the guidelines for working with hardware components. See Hardware Configuration Guidelines on page 6.
2. Connect all peripherals (mouse, keyboard, Wacom® tablet, graphics monitor) to the proper ports, and connect your workstation to the Autodesk® Wire® network. See Workflow for Connecting Peripherals on page 13.
3. Connect your workstation to your storage. See Connecting Storage on page 16.
4. Connect a VTR and a broadcast monitor to your workstation. See Wiring Your Video Components on page 26.
5. Set up the audio hardware. See Setting Up Audio Hardware on page 31.
6. Perform the procedures in the *Red Hat Enterprise Linux Workstation 4, Update 3 Installation and Configuration Guide* to install your Linux® operating system. Procedures for installing Windows® XP for Lustre can be found in the *Autodesk Lustre Software Installation Guide for Windows Workstations*.

7 Perform the procedures in the *Autodesk Visual Effects and Finishing Software Installation Guide*, *Autodesk Lustre Software Installation Guide for Windows Workstations* or the *Autodesk Lustre Software Installation Guide for Linux Workstations* to install and license your Visual Effects, Finishing, and Colour Grading application.

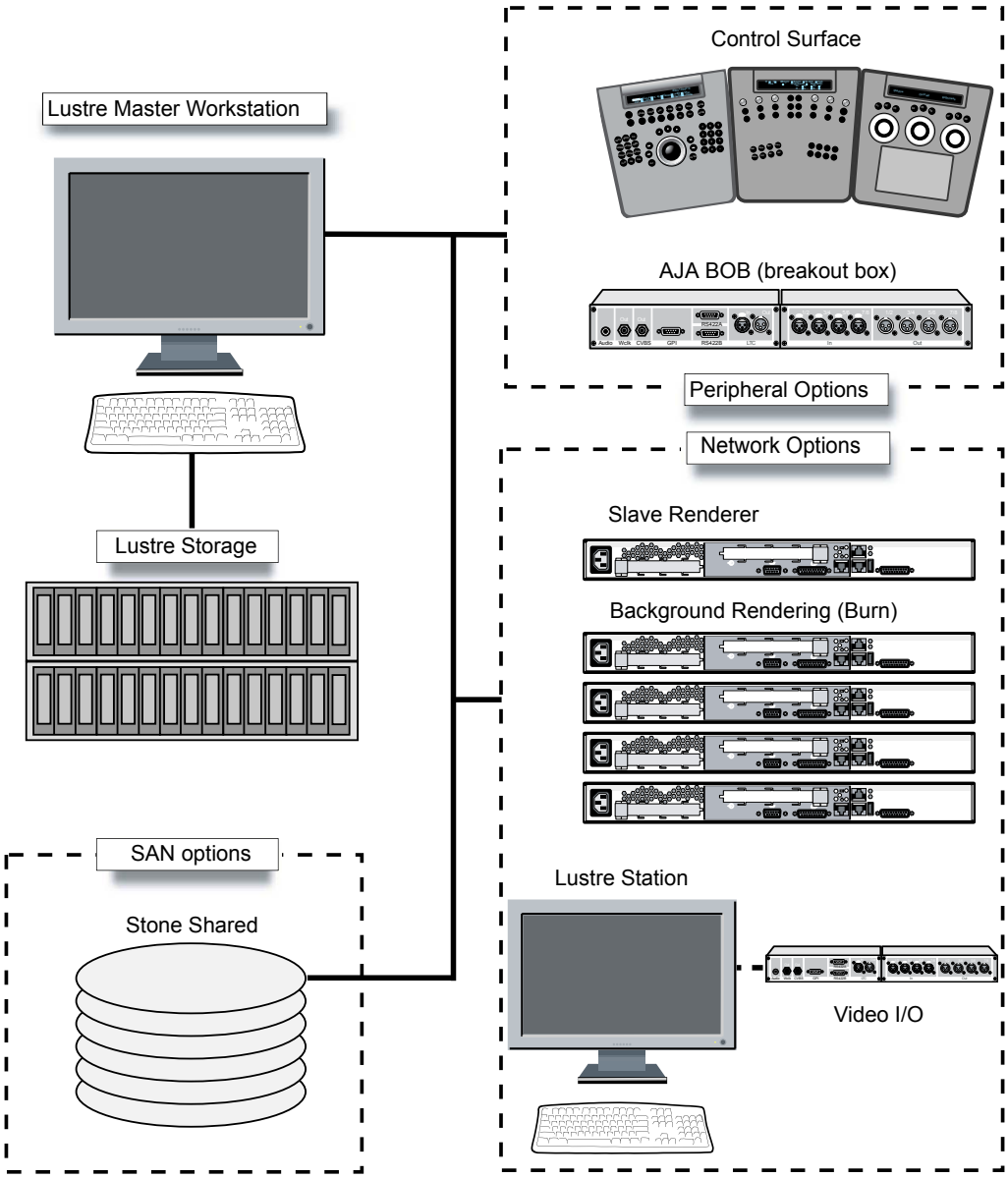
Typical Configuration Overview for Autodesk Effects and Finishing Applications

The following illustration shows a typical configuration, including the Wacom tablet, and other optional components.



Typical Configuration Overview for Autodesk Lustre

The following illustration shows a typical configuration, including the Lustre Master Station, Station, and other optional components.



NOTE For an Incinerator® system configuration overview, refer to the *Autodesk Incinerator 2009 Installation and User Guide*.

Hardware Configuration Guidelines

In most cases, hardware integration and application installation are done on delivery by an authorized technician, and some of the procedures in this guide may not be necessary. Still, it is a good idea to read through all chapters to familiarize yourself with the configuration procedures for the following reasons:

- Many suspected problems with your system may be due to loosened connections or improperly configured devices. This guide helps you troubleshoot problems by providing information about properly configured systems.
- If you need to call Customer Support, familiarity with this guide helps you assist Customer Support in diagnosing problems.
- If you want to move your system at any time, or upgrade certain hardware components, this guide contains crucial information.

This guide, in conjunction with the *Autodesk Stone Direct Configuration Guide*, provides complete information regarding configuring hardware components. However, hardware configuration should only be performed by an experienced hardware integrator.

Memory Requirements

The HP xw8600 supports up to 16 GB of memory, and uses DDR2 PC2-5300P ECC Registered / Unbuffered DIMMs. The amount of memory required for your Autodesk Visual Effects, Finishing, and Colour Grading system depends on the resolution of your projects, and the type of work you perform. Refer to the *Autodesk Visual Effects and Finishing Software Installation Guide*, *Autodesk Lustre Software Installation Guide for Linux Workstations*, or the *Autodesk Lustre Software Installation Guide for Linux Workstations*.

Ensuring Proper Environmental Conditions

You should consider the following environmental guidelines for all hardware configuration:

- Place all components in an air-conditioned environment. All hardware components generate heat and must be kept cool. See Power and Air Conditioning Requirements on page 6.
- Make sure the rack on which hardware components are mounted is open or well ventilated. Follow the ventilation specifications that apply to your system. See Rack Mount Requirements on page 7.
- Keep all hardware components in a clean, dust-free location.
- Minimize vibration and humidity.
- Do not block the vents on the component housing.
- Do not drape anything, such as a jacket or a blanket, over hardware components.
- Minimize electromagnetic noise by separating digital data and power cables from analog audio cables and running them in different cable ducts.

Power and Air Conditioning Requirements

The values for power consumption and heat output were recorded on an Autodesk certified system with all of the required peripherals and certified components.

NOTE These values can fluctuate if uncertified hardware components or third party applications are added to your system. The use of uncertified hardware components or third party applications is not supported. Please consult the manufacturer's documentation for standardized minimum and maximum values.

The following table summarizes the peak (at startup) power consumed by the HP xw8600 system and the heat it generates under the maximum processing load produced by your Visual Effects, Finishing, and Colour Grading application. For detailed specifications, including noise output, see the documentation provided by the manufacturer.

Component	Quantity	Startup Amps (120V / 240V)	Max. Amps (120V / 240V)	Watts	Heat (BTUs)
HP xw8600	1	4.0 / 2.0	3.7 / 1.9	456	1556.32
Lucid ADA 88192	1	0.5 / 0.3	0.5 / 0.3	45	153.58

You must be able to meet the startup power requirement and have a climate control system with the capacity to maintain the temperature of these components under the maximum processing load. Refer to the following table for standard conversion benchmarks and an example of how they are used to establish climate control requirements.

Unit Conversion	Example
1 Watt = 3.413 BTU	384 Watts = 1228.68 BTU
12000 BTU = 1 Ton of air conditioning	1228.68 BTU = 0.102 Ton of air conditioning

Rack Mount Requirements

You can rack mount your Visual Effects, Finishing, and Colour Grading system. Plan for sufficient space in your rack mount chassis to install the following components:

- An HP xw8600 system
- An AJA OEM-2K breakout box
- A Stone® Direct storage chassis (XR model)
- Additional Stone Direct expansion chassis (XE model), as required

The form factor units of these components are provided in the following table.

Component	Quantity	Form Factor	Required Rack Space
HP xw8600	1	5U	5U
AJA OEM-2K breakout box	1	1U	1U
Stone Direct storage chassis (XR)	1	2U	2U
Stone Direct expansion chassis (XE) (each)	1	2U	2U

Avoiding Damage from Static Electricity

When installing any hardware equipment, take the following precautions to prevent damage to sensitive components from static discharge:

- Make sure power is turned off on the component you are working on. It is a good idea to unplug components until all other connections are configured.
- Always wear a grounded static wrist strap. Attach the strap's alligator clip to any grounded metal surface on the component's chassis that you are working on. Place the wristband around your wrist.
- Do not handle any components unnecessarily, particularly boards and cards that slide in and out of PCI slots on their parent hardware components.

Grounding Audio Hardware Components

It is important to properly ground your audio components. Otherwise, you may have ground loops, or humming in the system. To ensure audio components are properly grounded, use the XLR-3 cables shipped with your system. Using any other cables may cause humming in the system.

Receiving Your Shipment

When you receive your shipment, check all the boxes for dents or other markings that may indicate damage during transport. If you suspect a component is damaged, carefully inspect it before setting up the system. If you receive a damaged component, call Customer Support.

Use the enclosed packing checklist to ensure that you received all of the parts.

BIOS and Firmware

System BIOS

System configuration is done prior to delivery by an authorized technician. The procedures in this section may not be necessary, and are provided here for informational purposes only.

NOTE Refer to your product's release notes for the latest system BIOS and firmware versions.

Updating Your System BIOS

The BIOS version installed on your system appears on the screen while booting the workstation. The following procedure describes how to update a workstation to the certified BIOS version required by your Autodesk Visual Effects, Finishing, and Colour Grading application.

NOTE Before attempting to update the system BIOS, make sure the SATA Emulation option is properly set, otherwise your optical drive is not detected. See Checking Your System BIOS Settings on page 9.

To update the BIOS on your workstation:

1. Insert the application disc in the drive of the workstation.
2. Open a terminal, log in as root and mount the DVD.

3 Go to the *DKU_<version_number>/Utils/BIOS* directory on the DVD, where <version_number> represents the version of the DKU. For example:

cd /mnt/cdrom/DKU_3.5.0/Utils/BIOS

TIP If the DKU has already been installed on the workstation, you can access its contents in the */usr/discreet/DKU* directory, without having to use the application DVD.

Each platform supported by the version of your Visual Effects, Finishing, and Colour Grading application has its own directory that contains an *.iso* file.

NOTE For more information about updating the BIOS on your workstation, refer to the README file also located in the platform's directory.

4 Type:

cd <platform>

5 Burn the *.iso* file onto a CD and place it in the DVD-ROM drive on the workstation.

6 Reboot the workstation and press **F10** to enter the system BIOS.

7 Optional: Press **F8** to select a language.

8 Select File | Flash System ROM.

The Select a Drive dialog box appears.

9 Select CD-ROM and press **F10** to confirm.

10 Select the *.bin* file.

The Flash® System ROM confirmation dialog box appears.

11 Press **F10** to confirm.

12 Press any key.

A message stating that the system ROM flash was successful appears.

13 Verify system BIOS settings. See Checking Your System BIOS Settings on page 9.

14 Select File | Save Changes and Exit.

Checking Your System BIOS Settings

Before installing your operating system, use the following table to validate your BIOS settings.

WARNING If SATA emulation is not set up correctly, you will need to reinstall Red Hat Linux.

The following table lists the proper Autodesk certified BIOS settings. Items not listed are set to their default factory settings.

BIOS Menu	Item	Value
Storage	Storage Options, SATA Emulation	Separate IDE Controller
	Boot Order, Hard Drive	Integrated SATA
		Integrated IDE
	Boot Order	Optical Drive
		USB Device

BIOS Menu	Item	Value
Power	OS Power Management, Runtime Power Management	Disable
	OS Power Management, Idle Power Saving	Normal
	OS Power Management, ACPI S3 Hard Disk Reset	Disable
	Hardware Power Management, SATA Power Management	Disable
Advanced	Chipset / Memory, PCIe Lane Allocation (SLOT4:SLOT5)	x8:x8
	Device Options, S5 Wake on LAN	Disable
	Slot 7 - PCI-X 133, Speed	100 MHz PCI-X M1

Restoring BIOS to Default Factory Settings

If there is any doubt about whether items contain factory default values, the following procedure restores default factory settings.

To restore default factory BIOS settings:

1. Press **F10** while booting the workstation to enter the system BIOS.
2. Select File | Default setup | Restore Factory Settings as Default.
3. Press **F10** to accept the changes.
4. Select File | Apply Defaults and Exit, then press **F10** to confirm.
   The factory system defaults are restored.

AJA OEM-2K PCI-X Firmware

System configuration is done prior to delivery by an authorized technician. The following procedures may not be necessary, and are provided here for informational purposes only.

Verifying the AJA OEM-2K PCI-X Firmware

The firmware on your AJA OEM-2K PCI-X (AJA PCI-X) must correspond to the certified version required by your Visual Effects, Finishing, and Colour Grading application version. Refer to your product's release notes for the latest AJA OEM-2K PCI-X firmware versions.

NOTE This section is for Linux-based workstations only.

The AJA PCI-X firmware update utilities required to check your firmware version are included with the DKU version associated with the release of your Visual Effects, Finishing, and Colour Grading application. The following procedure describes how to verify the firmware version of the AJA PCI-X.

To verify the AJA PCI-X firmware version:

➤ Type:
`cat /proc/driver/aja`
An output similar to the following should appear:

```
AJA Driver Name: oem2k
Version: 4.1 Beta 11
```

```
Card #: 0
Board Version String: OEM 2K - Rev 0
PCI Version: 0x73
Board ID: 10196500
FPGA built on 2007/09/18 at 10:57:41
```

NOTE If there is no *aja* file in /proc/driver, you are using an outdated driver or the driver is not loaded and you must install the latest DKU for your workstation. Refer to the *Autodesk Visual Effects and Finishing Software Installation Guide*.

Updating the AJA PCI-X Firmware

NOTE This section is for Linux-based workstations only.

If you verified the firmware on your AJA PCI-X and it did not match the certified version, you must update it. The following procedure describes how to update the firmware of the AJA PCI-X to the certified version required by your Visual Effects, Finishing, and Colour Grading application.

To update AJA PCI-X firmware:

1. Open a terminal, and log in as root.
2. Insert the application DVD in the DVD-ROM drive.
3. Mount the DVD, and go to the *DKU_<version_number>/Utils/AJA_firmwareUpdate* directory, where <version_number> represents the version of the DKU, for example:

   cd /mnt/cdrom/DKU_3.5.0/Utils/AJA_firmwareUpdate

   TIP If the DKU has already been installed on the workstation, you can access its contents in the */usr/discreet/DKU* directory, without having to use the application DVD.

4. Run the *AJAfw_update* utility to scan the AJA current firmware and, if required, update to the latest firmware version. Type:

   ./AJAfw_update

   The script checks the firmware of your AJA board, and one of the following events occurs:

   - The script detects that the firmware and drivers need to be updated and prompts you to start the update. In this case, continue to the next step of this procedure.
   - The script indicates that the firmware is up-to-date and exits. In this case, you are finished; go to step 6 of this procedure to eject the DVD.

   NOTE For more details about the AJA firmware procedures, consult the *README* file located in the current directory.

5. Start the firmware update by typing **Y** and then pressing **Enter**.

   While the AJA board's firmware and drivers are being updated, your workstation appears to be frozen and your mouse and keyboard do not work. This is normal and indicates that the firmware is being updated. Once the firmware update is complete, you are returned to the terminal.

6. When you are returned to the terminal, return to the root directory and eject the DVD by typing:

   cd /

   eject /mnt/cdrom

7 Shut down your workstation by typing:

```
shutdown -g0
```

If your workstation does not prompt you to power down, press the power button for 10 seconds to force a power down.

8 Disconnect the power cord.

9 Wait 10 seconds, reconnect the power cord, then restart your workstation.

Connecting Peripherals 3

Topics in this chapter:

- Workflow for Connecting Peripherals on page 13
- Connecting the Monitor on page 14
- Connecting the Keyboard, Mouse, and Tablet on page 14
- Connecting the Monitor Calibration Device on page 15
- Network Connections on page 15
- Connecting Storage on page 16
- Connecting Archive Storage on page 17
- Connecting the Autodesk Control Surface on page 18
- Connecting the Slave Renderer to a Lustre Workstation on page 22

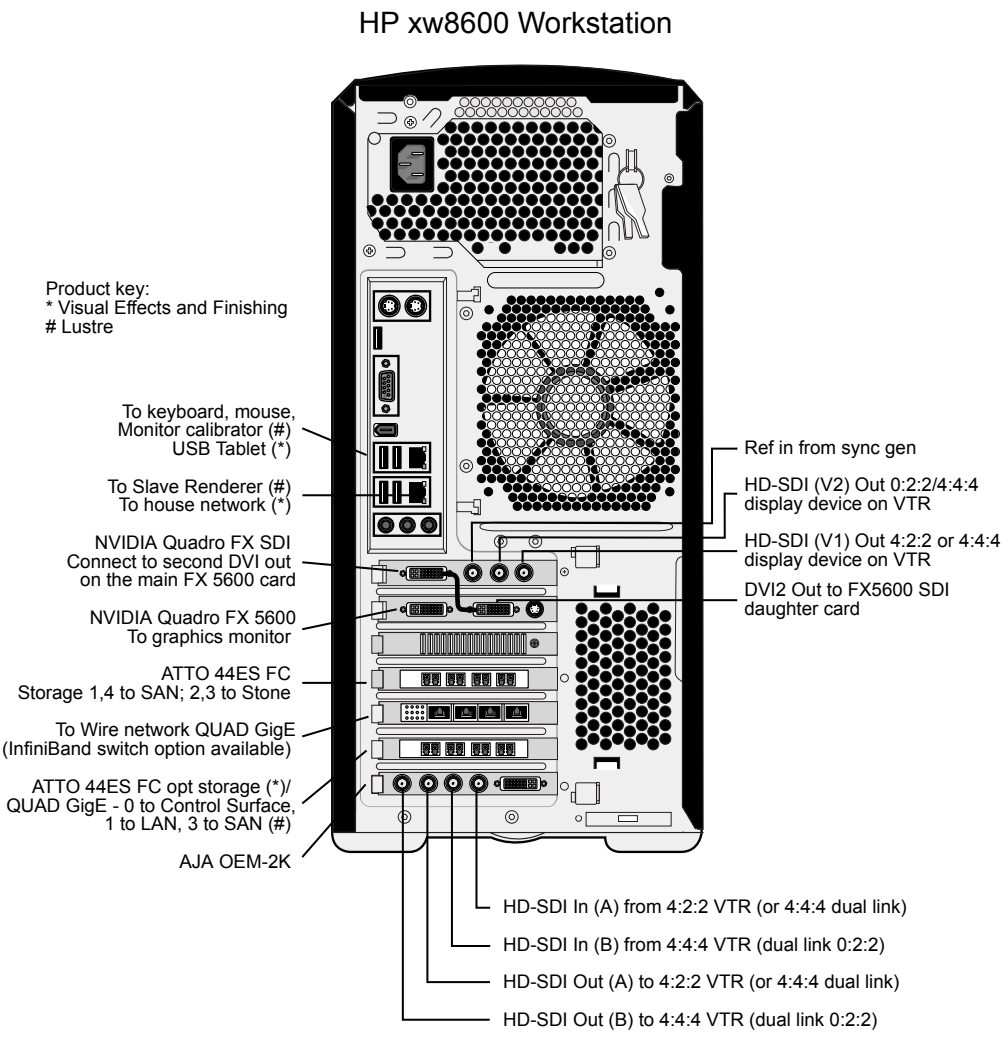
Workflow for Connecting Peripherals

You must connect peripherals (monitor, keyboard, mouse, storage, and network) to each Visual Effects, Finishing, and Colour Grading workstation before you connect the workstations to video I/O, a Control Surface, or to other components in the workgroup.

Connect all hardware peripherals before you boot your workstation.

The following diagram shows the connections for the HP xw8600 workstation.

NOTE All the diagrams in this document illustrate a Gigabit Ethernet (GigE) adapter located in PCI slot five. Your workstation may also be configured with an optional QuickSilver InfiniSERV 9000 PCIe-DDR adapter. On the HP xw8600 workstation, the PCI slots are numbered one to seven from top to bottom.


HP xw8600 Workstation
Product key:
* Visual Effects and Finishing
# Lustre
To keyboard, mouse,
Monitor calibrator (#)
USB Tablet (*)
To Slave Renderer (#)
To house network (*)
NVIDIA Quadro FX SDI
Connect to second DVI out
on the main FX 5600 card
NVIDIA Quadro FX 5600
To graphics monitor
ATTO 44ES FC
Storage 1,4 to SAN; 2,3 to Stone
To Wire network QUAD GigE
(InfiniBand switch option available)
ATTO 44ES FC opt storage (*)/
QUAD GigE - 0 to Control Surface,
1 to LAN, 3 to SAN (#)
AJA OEM-2K
Ref in from sync gen
HD-SDI (V2) Out 0:2:2/4:4:4
display device on VTR
HD-SDI (V1) Out 4:2:2 or 4:4:4
display device on VTR
DVI2 Out to FX5600 SDI
daughter card
HD-SDI In (A) from 4:2:2 VTR (or 4:4:4 dual link)
HD-SDI In (B) from 4:4:4 VTR (dual link 0:2:2)
HD-SDI Out (A) to 4:2:2 VTR (or 4:4:4 dual link)
HD-SDI Out (B) to 4:4:4 VTR (dual link 0:2:2)

Connecting the Monitor

To connect the monitor:

➤ Use the DVI cable to connect the DVI OUT1 port of the NVIDIA® Quadro® FX 5600 graphics card to the DVI-D IN port of the monitor.

You can use the DVI extender cable (DL.CAB-HDTV-FO82MM) to extend the cable to a machine room.

NOTE Although the DVI fiber cable connectors are identical, their functions are different. Ensure that the connector labeled Send is connected to the workstation, and that the connector labeled Receive is connected to the monitor.

Connecting the Keyboard, Mouse, and Tablet

Connect the keyboard, mouse, and tablet to the USB extender and the workstation *before* booting the workstation and before installing the application.

The Wacom® Intuos USB tablet is shipped with your system. All customization with respect to the tablet, including setting tablet margins, should be done in the Preferences menu of your application. For help, see the description of Pointer preferences in your Autodesk Visual Effects and Finishing application User Guide.

NOTE You do not need to connect a tablet if you are using Lustre and you have a Control Surface with an integrated tablet. If you do not have a Control Surface with an integrated tablet, you can connect a stand-alone tablet. On Windows-based workstations, you may need to restart Windows for the tablet to be recognized.

Connecting the Monitor Calibration Device

To connect the calibration device:

➤ Connect the monitor calibration device (TP.MON-CAL-LCDCRT) to port 4 on the remote unit of the USB extender (TP.USB-EXT-410I).

To enable the Eye-One calibration utility driver:

Do one of the following:

- For Windows-based workstations, if the driver is not already installed, you will be prompted to install the monitor calibration device driver when you restart the workstation. The driver is available from the *C:\Program Files\discreet\<version>\Utils\Calibration\Eye-One USB Driver* directory.
- For Linux workstations, once the software installation has been completed, start the *eyeone27* daemon on the workstation. Type: **`/etc/init.d/eyeone27 start`**

To calibrate an EIZO CE240W or EIZO CG241W LCD monitor, refer to the the *Lustre Color Management 2008 User Guide*.

Network Connections

Connect the workstation to your facility's network to access background rendering nodes, other workstations, and the facility's NAS or SAN centralized storage (if applicable).

Consult the Peripherals Connection Diagram as a reference for network interface card (NIC) locations.

Connecting to Gigabit Ethernet (GigE) Networks

You must use the correct Gigabit Ethernet network card to connect your workstation to the Wire network. Otherwise, you may degrade the performance of your Wire network.

Do the following to maximize Wire network performance in your facility:

- Connect ports from the add-on network card to the switch used for your Wire network.
- Connect the house network to the on-board network port shown in the Peripherals Connection Diagram. Do not use any of the ports on the add-on network card for your house network. If the house network is not connected to the on-board network port, consult your system administrator to reconfigure it.
- Use high-quality Category 6 (Cat 6) network cables when connecting the workstation to your Wire network switch.

4-Port Broadcom Adapter

If you are using Lustre, connect the ports on the Broadcom card as follows:

- Connect Port 0 to the Autodesk Control Surface hub or the Control Surface itself.
- Connect Port 1 to your house network.
- Connect Port 2 to a SAN private network (optional).

For more details about configuring the Autodesk Control Surface, see Connecting the Autodesk Control Surface on page 18

Integrated Network Adapter for Lustre

For Windows-based Lustre workstations, connect the integrated network port to the Slave Renderer. For more details about connecting the Slave Renderer, see Connecting the Slave Renderer to a Lustre Workstation on page 22.

For Linux-based Lustre workstations, connect the integrated network port to the Incinerator private port. Refer to the *Autodesk Incinerator 2009 Installation and User Guide* for information on how to connect your workstation to the Incinerator private network.

Connecting to the InfiniBand (IB) Network

You can configure your Visual Effects, Finishing, and Colour Grading workstation with an optional QuickSilver InfiniServ 9000 PCIe-DDR series IB adapter. The IB network adapter resides in PCI slot five. On the HP xw8600 workstation the PCI slots are numbered one to seven from top to bottom. Consult the Peripherals Connection Diagram as a reference for the optional IB network adapter location.

You must use the correct port on the IB network adapter to connect your workstation to the IB Network.

To connect the workstation to IB network:

➤ Connect port 1 of the IB network adapter to the IB network. On the HP xw8600 workstation Port 1 is the port furthest from the air vents. For information on how to configure the IB adapter, refer to the *Autodesk Stone and Wire Filesystem and Networking Guide* or *Autodesk Lustre 2009 User Guide*.

Connecting Storage

You can connect your workstation to two types of storage:

- One or more Stone Direct disk arrays that provide storage to individual workstations. Refer to the *Autodesk Stone Direct Configuration Guide* for information on connecting disk arrays to your workstation.
- A storage-area network (SAN), such as a CXFS volume. Refer to the SAN vendor documentation for details on SAN configuration.

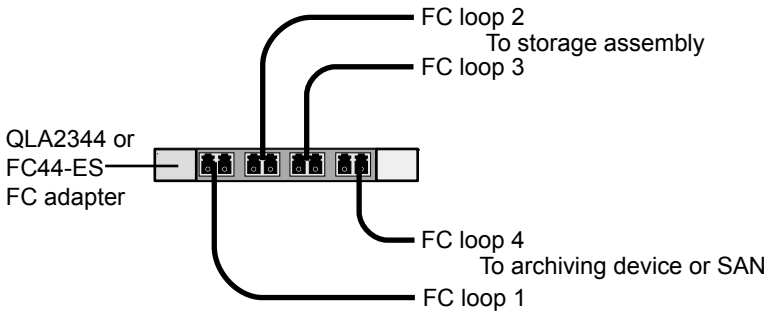
NOTE To be capable of two streams of HD (32/8 audio tracks), or one stream of 2K 10-bit (8/8 audio tracks), the system needs two fibre channel loops at 4Gb/s, and a minimum of two storage chassis (one XR and one XE).

WARNING The system has a filesystem limit of 8 terabytes. When configuring your storage, ensure each partition does not exceed 8 terabytes, and that inodes are correctly configured. Refer to the *Autodesk Stone and Wire Filesystem and Networking Guide*.

NOTE Lustre with Incinerator doesn't need local storage and uses InfiniBand to connect Incinerator.

Connecting and Configuring the ATTO Fibre Channel Adapter

Your workstation is configured with a 4-port ATTO Celerity FC-44ES fibre channel adapter in PCI slot four. On the HP xw8600 workstation the PCI slots are numbered one to seven from top to bottom. Consult the Peripherals Connection Diagram as a reference for the ATTO fibre channel adapter location.



Connecting Archive Storage

NOTE This section does not apply to Lustre.

For data archiving, your Visual Effects and Finishing application supports the following devices:

- USB 2 and FireWire® (IEEE 1394) attached devices. They can be formatted as XFS, ext2, ext3, or HFS (Mac®) file systems. NTFS is *not* supported.
- Fibre channel devices that use standard UNIX tape device calls.

The fibre channel devices that may be used are the ones for which the vendor confirms the following:

- The device driver is compliant with standard UNIX tape device calls.
- The device is certified for use with the specific versions of your operating system and kernel, Red Hat® Enterprise Linux Workstation 4.0, Update 3.

While Autodesk Media & Entertainment makes no certification statement about any device, the following SCSI devices have been tested and found to be reliable when connected using an ATTO Fibre Channel to SCSI Bridge 2390:

- Quantum LT03
- Quantum DLT8000
- Quantum DLT7000
- Sony™ AIT3 SDX-D700C
- Sony AIT2

Configuring the Archiving Device

The software initialization file (*init.cfg*) for your Visual Effects and Finishing application contains examples of the use of the *ClipMgtDevice Tape* keywords. Use these examples to select a block size value for your tape

device, as well as to select a text label that identifies the device in the Archiving module. Refer to the *Autodesk Visual Effects and Finishing Configuration File Reference Guide* for additional information.

You should also refer to the documentation from your archiving device vendor for guidelines on the actual block size to use.

Connecting the Autodesk Control Surface

NOTE This section does not apply to Autodesk Visual Effects and Finishing applications.

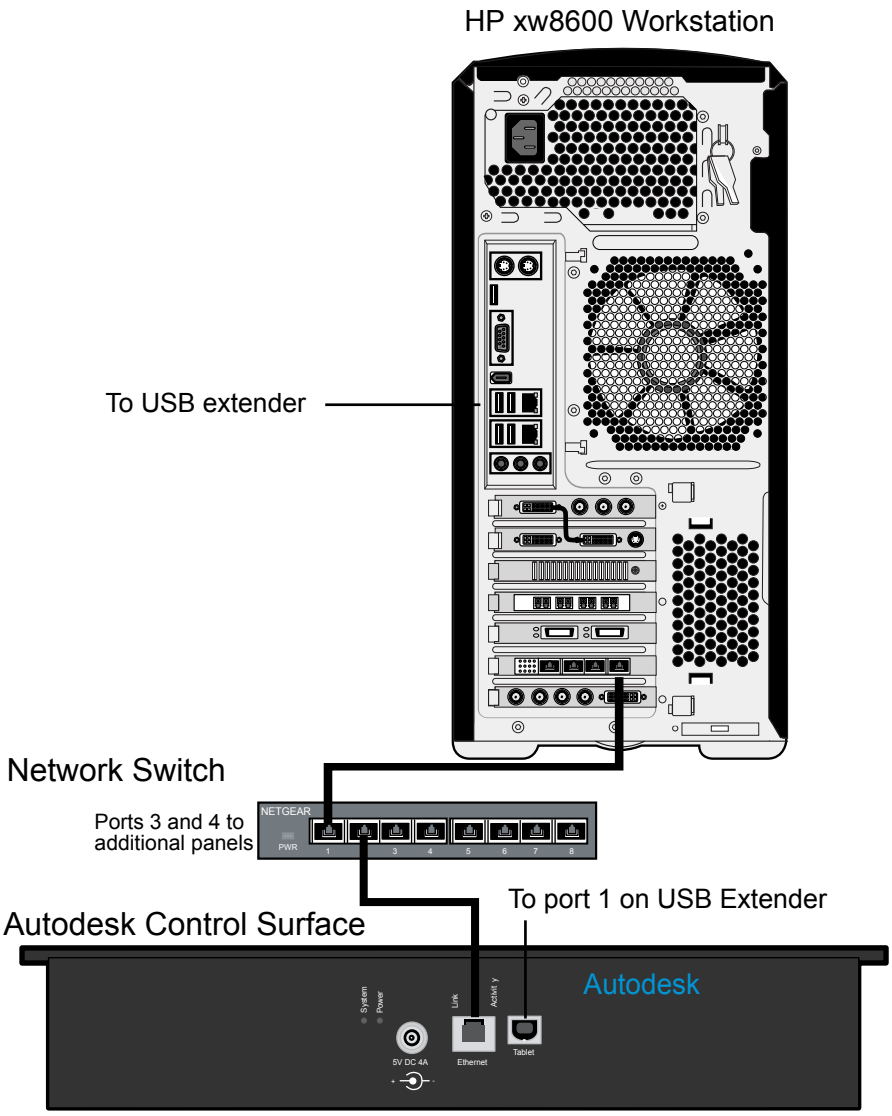
The Autodesk Control Surface consists of three panels. You can use any combination of them. If you are using more than one panel, you must use the network switch included with your shipment to cross-connect them.

Refer to the *Autodesk Control Surface User Guide* for information on how to use the Control Surface with Lustre.

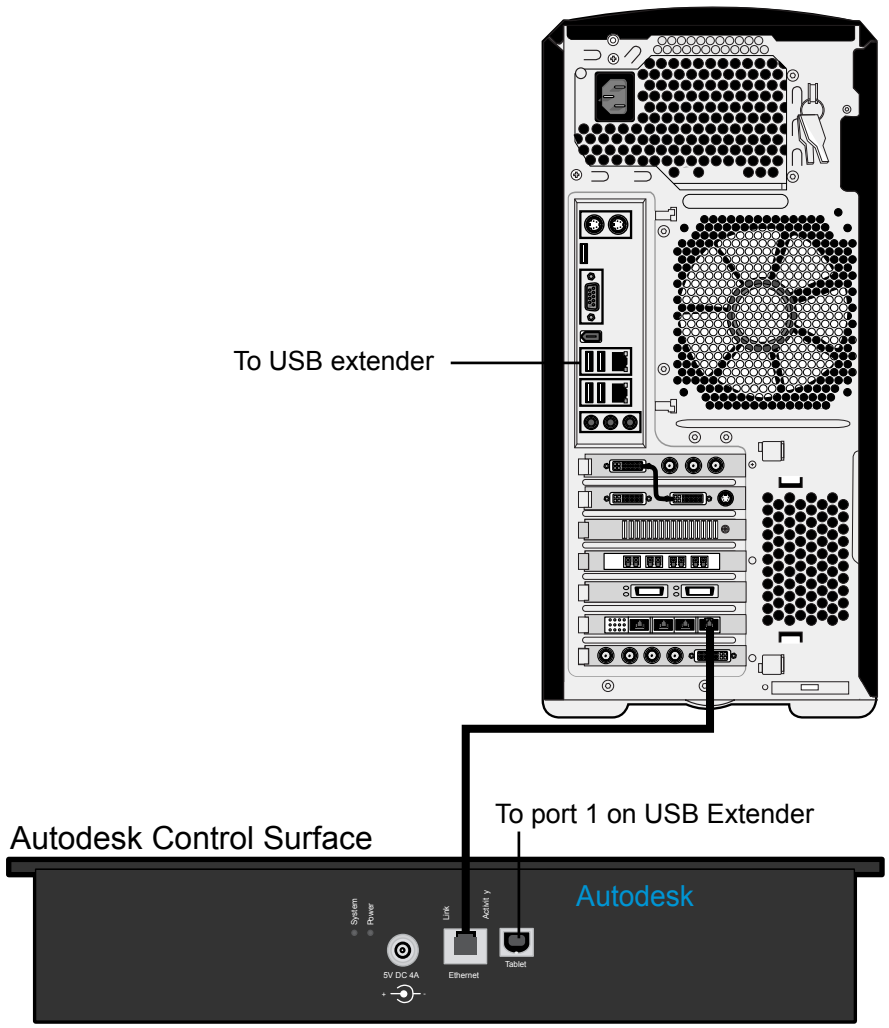
NOTE The illustrations in the following procedure only show the central module, that is the Colour Grading panel. This is the only panel that has a USB connection for the integrated tablet, and a network port. The other two panels only have a network port, which you connect to the network switch.

To connect the Autodesk Control Surface:

1. Use the AC power adapter cables to connect each panel to a power supply.
2. Use a network cable to connect port 0 (the far right port) of the Broadcom network card on your workstation to port 1 on the Netgear ProSafe FS108 network switch.



If you are using only one panel, you can connect that panel directly to the workstation, instead of using the switch.



3 If you are using more than one panel, use network cables to connect each of the panels to the network switch.

4 If you are using the panel that includes the tablet, use a USB cable to connect the panel to a USB port on the back of your workstation.

Configuring the Autodesk Control Surface

Assigning an IP Address to the Autodesk Control Surface

After you have connected the Autodesk Control Surface, you must assign it an IP address.

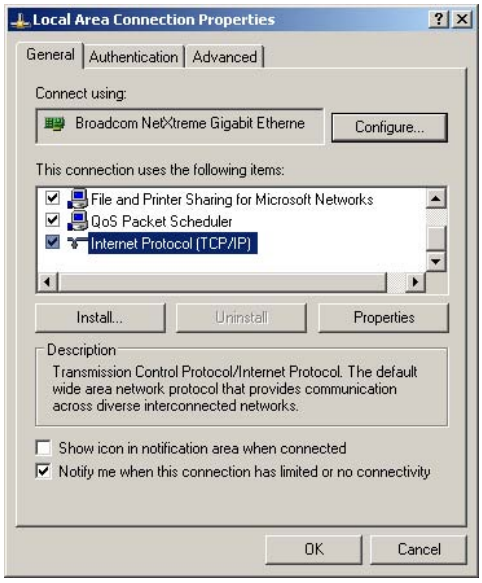
To configure the IP address on workstations:

1 Click Start | Settings | Network Connections.

NOTE You can also access Network Connections from the Control Panel.

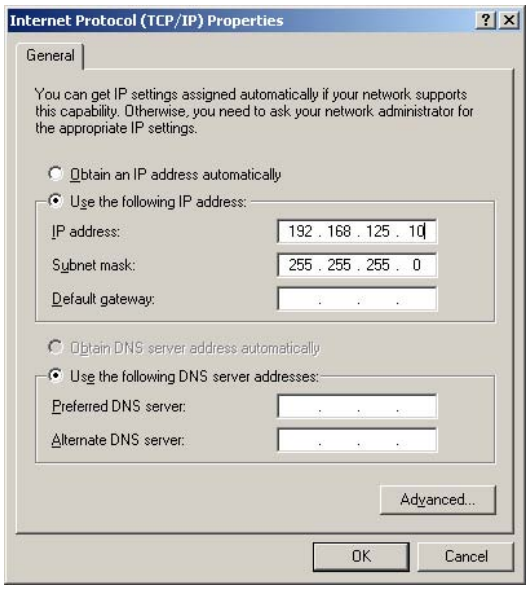
2 Right-click the port that the Control Surface switch or panel is connected to and choose Properties.

3 In the Local Area Connections Properties dialog box, select Internet Protocol (TCP/IP) and click Properties.



The Internet Protocol (TCP/IP) Properties dialog box opens.

4 Select the Use the following IP address option.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 125 . 10
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

5 Set a static IP and Subnet mask address for the port. Select values that do not conflict with any other machine on your network. Consider using the following values:

- IP address: 192.168.125.10
- Subnet mask: 255.255.255.0

6 Click OK twice.

To configure the Autodesk Control Surface on Linux-based Workstations:

1 Type:

nedit /etc/sysconfig/network-scripts/ifcfg-eth<port#>

2 Modify the IPADDR and NETMASK values. For example:

```
IPADDR=192.168.125.10
NETMASK=255.255.255.0
```

Configuring the init.config File for the Autodesk Control Surface

After you have configured the IP address of the Control Surface, you must configure the *init.config* file to use the Control Surface. For information on configuring the init.config file, see the *Autodesk Software Installation Guide for Linux Workstations* or the *Autodesk Software Installation Guide for Windows Workstations*.

Connecting the Slave Renderer to a Lustre Workstation

The Slave Renderer is available for the Lustre Master Station, the Station, and the HD Station, all of which must be running on a Windows-based workstation. The Slave Renderer is not available for the Linux-based version of Lustre, since that version uses Incinerator to obtain real-time rendering and playback.

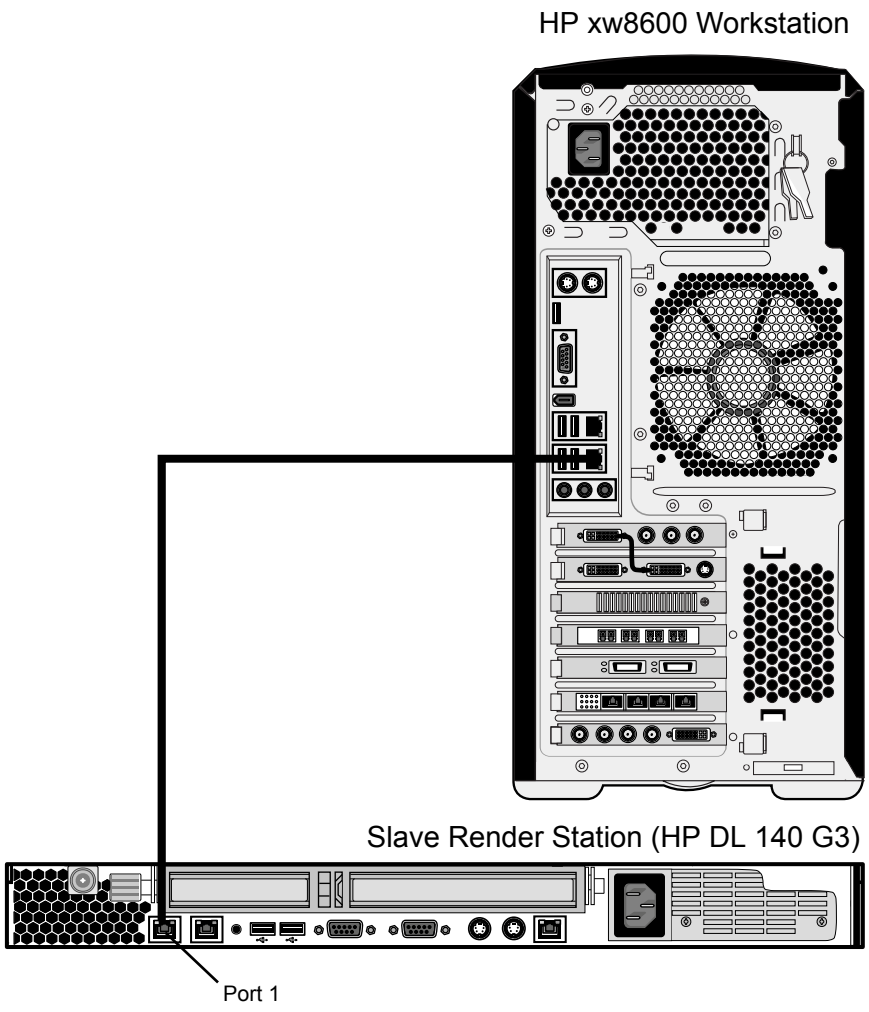
Although the Slave Renderer uses a network connection, a higher Category 6 grade cable is needed to accommodate the data that is transmitted. For information on configuring the IP addresses of the network ports that connect the two workstations, see the *Autodesk Software Installation Guide for Windows Workstations*.

To connect the Slave Renderer to a Windows-based workstation:

1 Connect the Category 6 crossover cable to the on-board network port at the back of the workstation.

2 Connect the other end of the cable to the network port 1 of the Slave Renderer machine.

The Slave Renderer should be connected as shown in the following diagram.


HP xw8600 Workstation
Slave Render Station (HP DL 140 G3)
Port 1

Setting Up Video Hardware

4

Topics in this chapter:

- Video Hardware Components on page 25
- Wiring Your Video Components on page 26
- Setting Up VTR Emulation on page 28

Video Hardware Components

Use the video components and wiring diagrams listed in this section to connect the video I/O components and a broadcast monitor to the HP xw8600 workstation.

The following components are included in your hardware shipment. The only video hardware you must provide are a sync generator, a VTR, a patch panel, if necessary, and an HD/SDI broadcast monitor.

NVIDIA Quadro FX 5600 graphics board The NVIDIA® Quadro® FX 5600 graphics board provides output to your LCD monitor directly, and to the broadcast monitor via the NVIDIA Quadro SDI board.

NVIDIA Quadro SDI board The NVIDIA Quadro SDI board provides 2K, HD, or SD video output to a broadcast monitor, VTR, or SDI projector. The board features a BNC genlock connector that connects to your sync generator.

AJA OEM-2K board and breakout box The AJA OEM-2K board provides video I/O, audio, and VTR control. The AJA breakout box connects to the AJA OEM-2K board and handles SD (NTSC, PAL), and HD at a depth of 8 and 10 bits.

LCD graphics monitor The LCD graphics monitor features a wide screen with a 16:9 aspect ratio, and a maximum resolution of 1920x1200.

AJA HD5DA distribution amplifier The AJA distribution amplifier receives its signal from the NVIDIA SDI board and provides output to a VTR and broadcast monitor. The distribution amplifier is necessary in order to use the Real-Time Deliverables feature.

Wiring Your Video Components

Refer to the wiring diagrams in this section to connect the video I/O components to an HP xw8600 workstation equipped with an NVIDIA Quadro SDI board.

Note the following about the wiring diagrams:

- If Real-Time Deliverables are not used, the output port and input port of the VTR connect to the SDI In A and SDI Out A ports of the AJA breakout box. You can use the SDI In B and SDI Out B ports for dual link video I/O.
- For Real-Time Deliverables, input port A of the VTR connects to the AJA HD5DA distribution amplifier (for 4:2:2 signal), and input port B connects to the middle connector on the NVIDIA SDI board (for dual link 4:4:4 signal). The VTR output ports A and B connect to the SDI In A and B ports of the AJA breakout box.

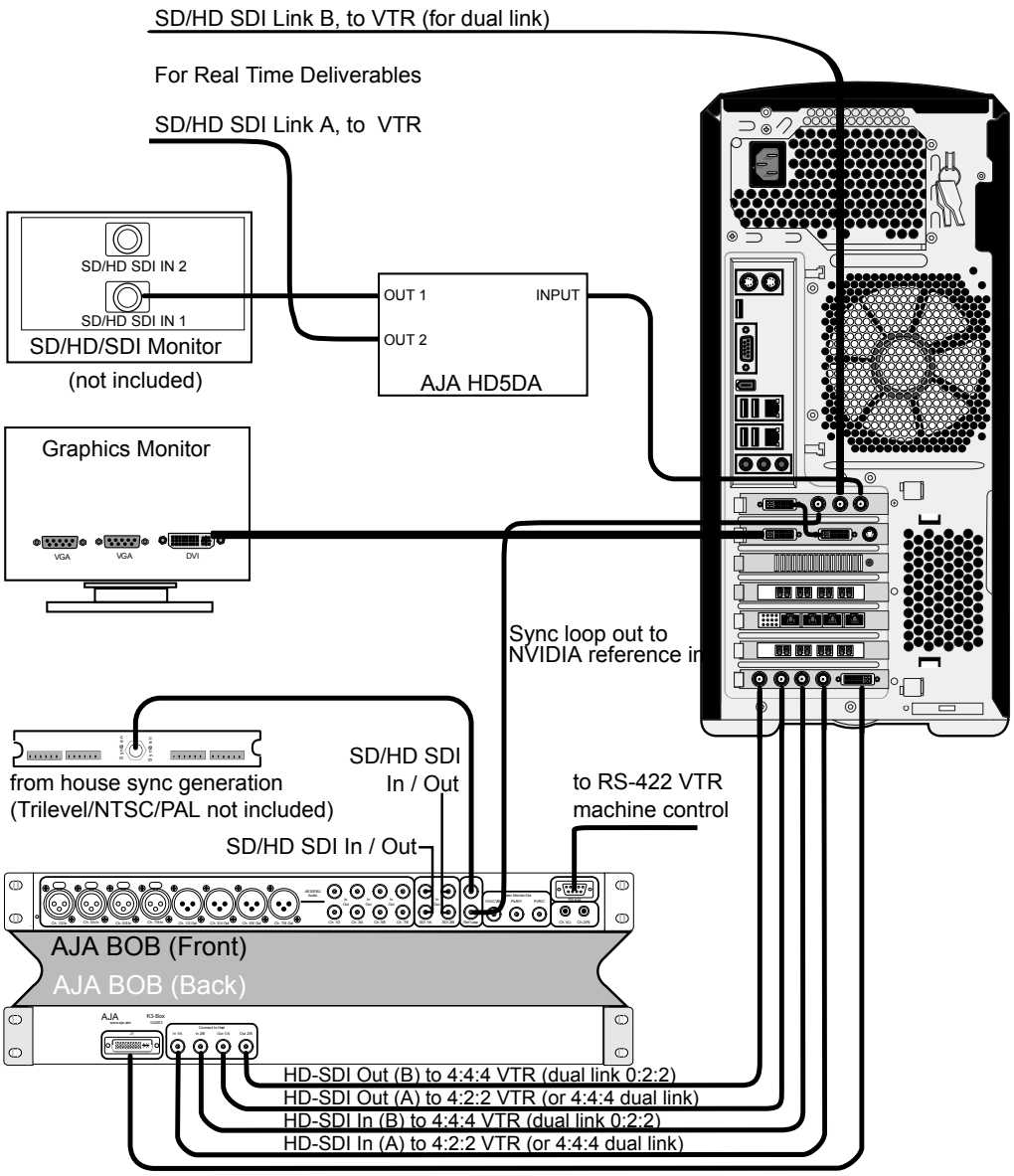
  NOTE The output of the AJA OEM2-k board, when ported through the AJA breakout box, can be used when connected to a VTR not being used for Real-Time Deliverables. You can switch the output between the AJA card and the SDI board though the application user interface.

- VTR control is provided through the RS-422 port on the AJA breakout box. See Standard VTR Control Cable Pinouts on page 27.
- The sync source connects to the appropriate connector on the NVIDIA Quadro SDI board.

  WARNING It is critical to connect the board exactly as shown in the diagram to ensure the sync works correctly.

- Do not use an SD (NTSC or PAL) sync generator for HD projects. Always use a tri-level sync generator for HD projects. Using the wrong sync generator for a project may impact the stability of your workstation.

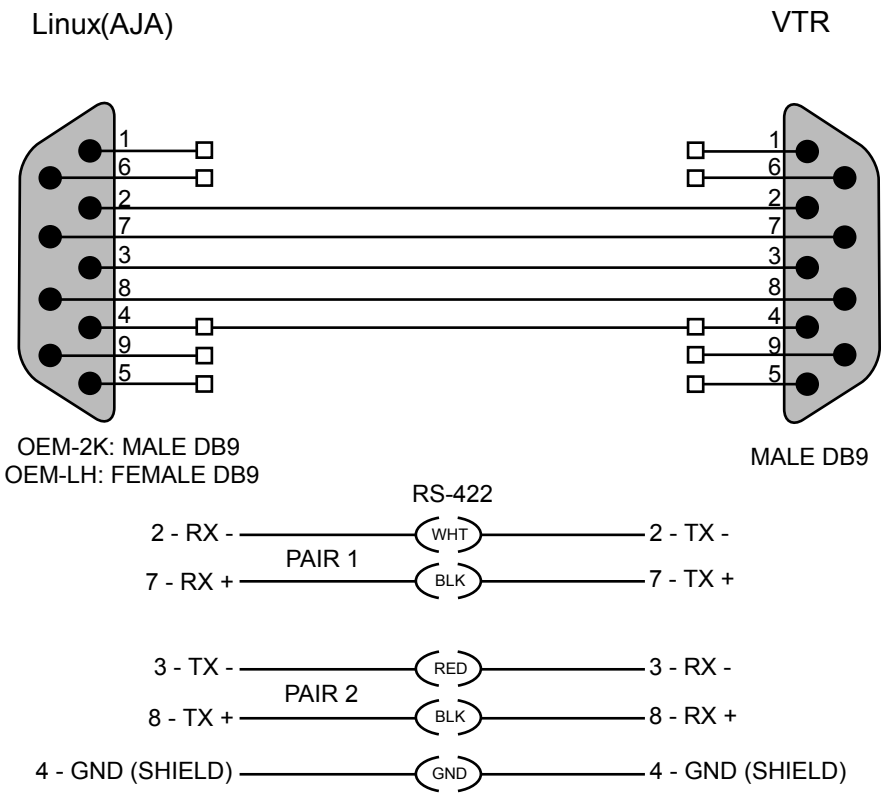
HP xw8600 video I/O



Standard VTR Control Cable Pinouts

The following diagram depicts the RS-422 control cable pinouts for the standard VTR control cable.

Standard VTR Control Cable:
Linux(AJA) Controlling VTR (Normal Video I/O Control Cable)



Setting Up VTR Emulation

You can configure your Autodesk Visual Effects, Finishing, and Colour Grading application to emulate a VTR for both input and output in real time. You control the emulator from the application or device that sees the Autodesk Visual Effects, Finishing, and Colour Grading application as a VTR.

The following procedure describes how to configure the hardware for VTR emulation. Consult the "VTR Emulation" chapter in your application User Guide for more information.

To configure hardware for VTR emulation:

1 Connect the video I/O cables between the devices involved in the VTR emulation process (out-to-in/in-to-out). Make sure the connections support the video standard you want to work with.

If you intend to use the emulator as a Player, it is recommended that you connect one black or colour bar SDI signal to the input of the system serving as the VTR emulator. This ensures the Player is stable and correctly synced.

NOTE This applies to an Autodesk Visual Effects and Finishing application only: VTR emulation requires a workstation with a video board. The Video keyword for the corresponding device must be uncommented in the software initialization configuration file, *init.cfg*. See the description of the Video keyword in the *Autodesk Visual Effects and Finishing Configuration File Reference Guide*.

---

2 Connect the audio I/O cables between the devices involved in the VTR emulation process (out-to-in/in-to-out).

If you intend to use the emulator as a Player, it is recommended that you connect an external AES signal such as a tone to the input of the system serving as the VTR emulator. This ensures the Player is stable and correctly synced.

NOTE Connect an RS-422 control cable to the serial ports between the devices used in the VTR emulation process. This applies to an Autodesk Visual Effects and Finishing application only: Make sure that the serial ports correspond to those defined by the Emulator keywords in the software initialization configuration file. See the description of the Emulator keyword in the *Autodesk Visual Effects and Finishing Configuration File Reference Guide*.

NOTE The RS-422 cables for VTR emulation require custom pinouts. See VTR Emulation RS-422 Control Cables on page 29.

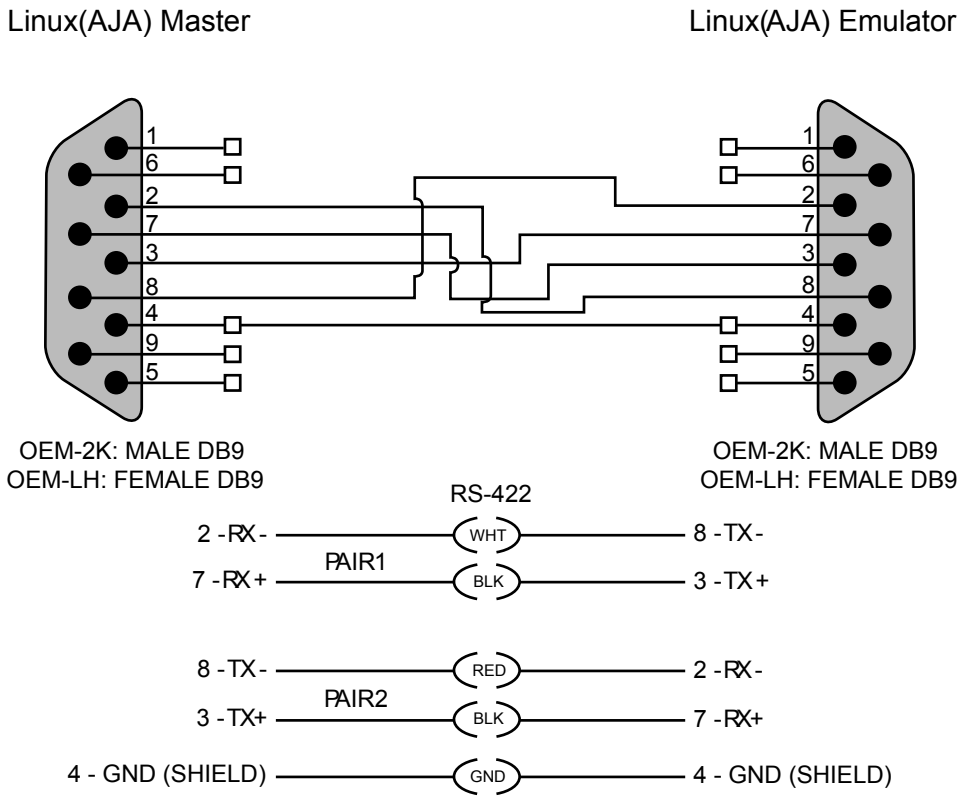
3 Make sure the appropriate video and audio sync setup is in place.

VTR Emulation RS-422 Control Cables

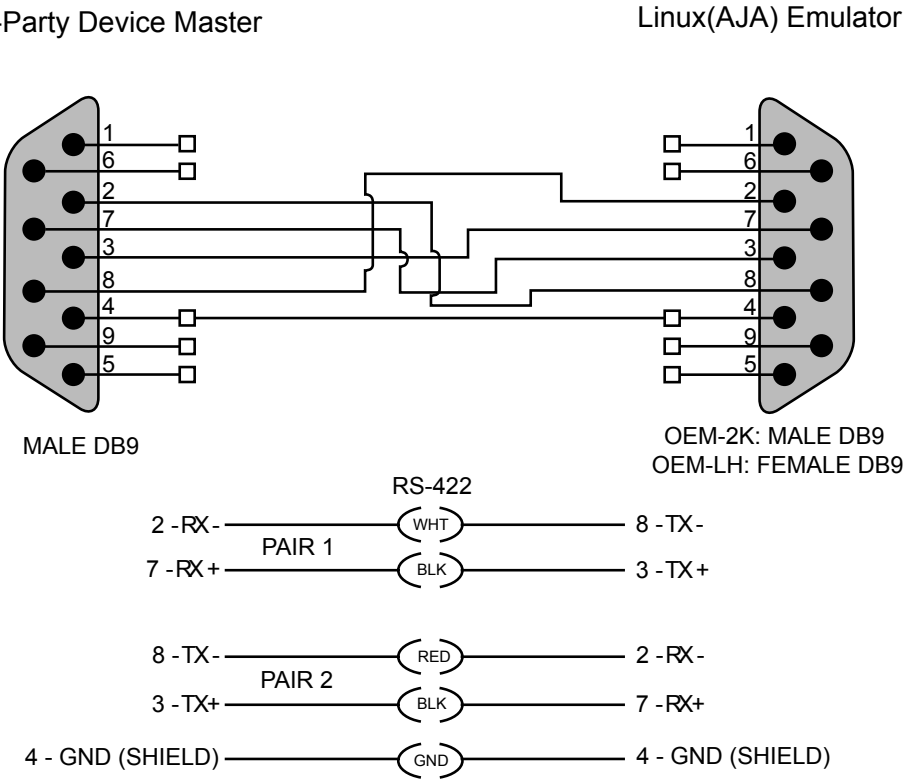
Custom cables are required to control the VTR emulator. The pinouts required by the cable depend on the workstation and device involved in the VTR emulation process. The following diagrams depict the control cable pinouts required for the most common VTR emulation setups.

VTR-Emulation Control Cable

Linux(AJA) Master Controlling Linux(AJA) Emulator



VTR-Emulation Control Cable:
3rd-Party Device Master Controlling Linux (AJA) Emulator



Setting Up Audio Hardware

5

Topics in this chapter:

- About Audio on page 31
- Audio Wiring Workflow on page 31
- Audio Hardware Components on page 32
- Audio Wiring on page 32
- Configuring the Lucid ADA 88192 Converter on page 33
- Audio Keywords in the Visual Effects and Finishing Configuration File on page 36

About Audio

Your application uses the Discreet Native Audio subsystem. Discreet Native Audio offers 8 audio input and 8 audio output channels. They all use 24-bit audio resolution.

Audio Wiring Workflow

The following procedure provides the general workflow for setting up the audio subsystem of your Visual Effects, Finishing, and Colour Grading application.

To wire the audio subsystem:

1. Ensure that all of your workstation peripherals and video hardware components are properly connected. If necessary, refer to Connecting Peripherals on page 13 and Setting Up Video Hardware on page 25.
2. Verify that you have all the required audio hardware components. See Audio Hardware Components on page 32.
3. Determine whether you want to control the Lucid converter remotely or locally. This affects the way you wire the audio hardware. See Understanding Remote vs. Local Control of the Lucid Converter on page 33.

4 Connect your audio hardware devices. To avoid system instability, make sure you connect your audio hardware as illustrated for your configuration. See Audio Wiring on page 32.

5 Configure the Lucid converter for remote or local control. See Configuring the Lucid ADA 88192 Converter on page 33.

6 Set the appropriate keywords in the software initialisation file. See Audio Keywords in the Visual Effects and Finishing Configuration File on page 36.

Audio Hardware Components

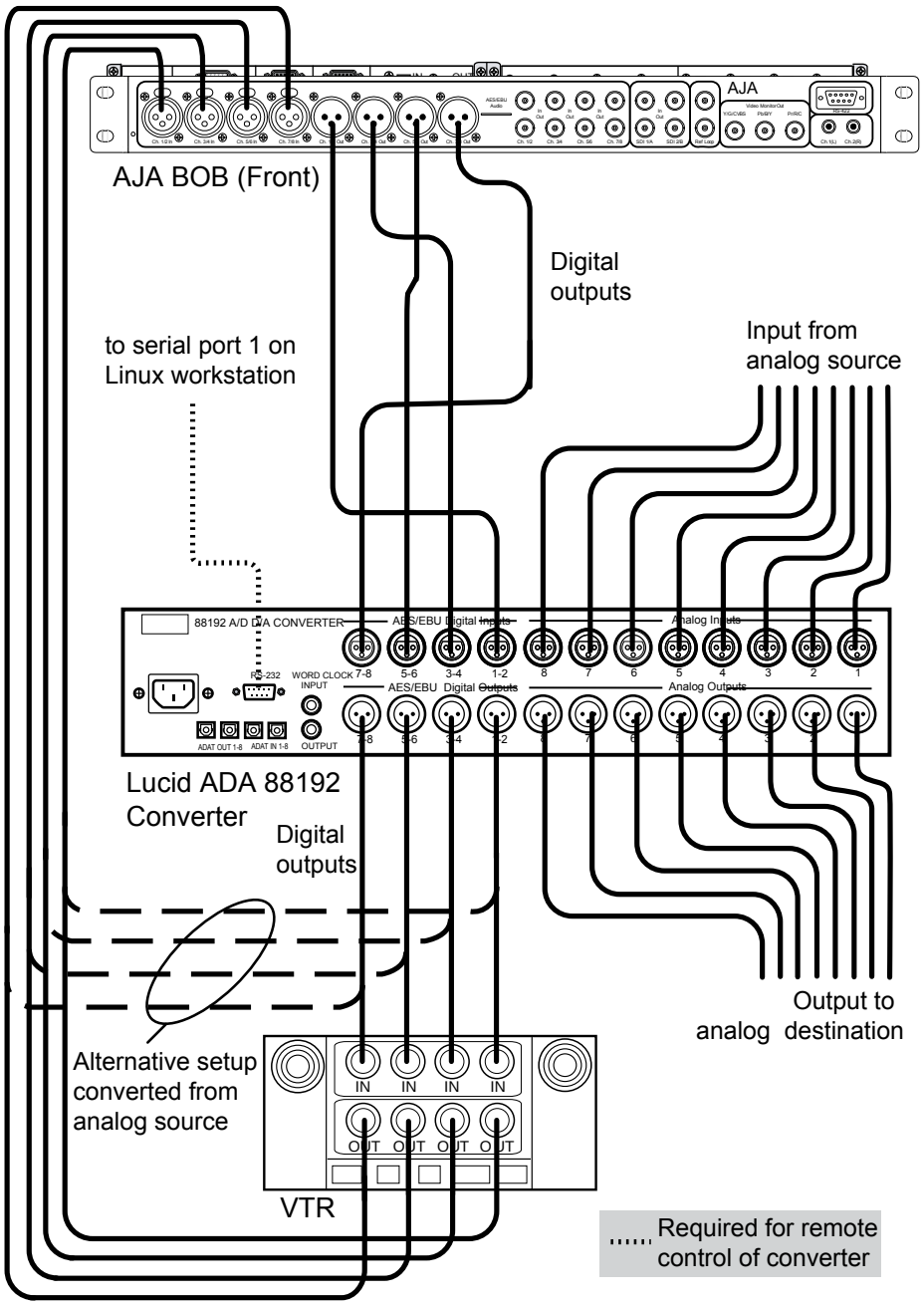
Discreet Native Audio uses the following hardware components, shipped with your system.

Lucid Converter ADA 88192 Converts signals between the workstation and all digital or analog audio I/O devices.

AJA Balanced Audio breakout box and AJA OEM-2K board The Balanced Audio breakout box is the audio component of the AJA breakout box. It provides connections for audio I/O. This breakout box connects to the AJA OEM-2K board on your workstation. The OEM-2K board provides real-time input and output of uncompressed SD and HD video signals as well as audio data at 24-bit resolution. The OEM-2K board handles balanced AES/EBU audio signals from the Balanced Audio breakout box. The OEM-2K board supports embedded audio up to 8 track.

Audio Wiring

To connect the Discreet Native Audio hardware components to the AJA breakout box, refer to the following diagram.



Configuring the Lucid ADA 88192 Converter

You must manually configure the Lucid converter for either remote or local control. This section describes how to use the controls on the front of the converter to adjust settings, and lists the proper settings for remote control and for local control.

Understanding Remote vs. Local Control of the Lucid Converter

You can control the converter either remotely or locally. Remote control of the converter means that you adjust converter settings through the audio preferences of the application. If you want to control the converter

remotely, you must connect the converter to the serial port of the HP xw8600 workstation. Local control means you adjust converter settings manually, using the controls on the front of the converter. Controlling the converter remotely is the recommended method as it does not require physical access to the converter to change settings.

Whether you control the converter remotely or locally, you should take any necessary precautions to prevent inadvertent adjustments to settings via the controls on the front of the converter. For example, if the converter is one of several in a machine room, you might label each with the name of the computer to which it is connected, along with whether control is local or remote.

Adjusting Lucid ADA 88192 Converter Settings

You configure the converter through a series of setup menus that appear in the display on the front of the converter. Use the encoder dial and button immediately to the right of the display to navigate these menus and adjust settings.

The top level setup menu contains the following menu items: ADAT, AES, Analog, Meter, Route, Sync, and System. Each of these menu items takes you into a submenu, from which you can select and adjust settings.

The procedures below provide basic information on navigating and adjusting settings. If you require additional information, refer to the Lucid ADA 88192 manual included with your shipment.

To navigate menus and adjust settings:

➤ Use the encoder dial and the button as follows.

To:	Do this:
Select a menu option	Rotate the dial to highlight the option, then press the dial to select that option. If the option you select has choices (as, for example, in the Route menu), rotate the dial again to move through the choices, and press the dial to select an option.
Back up one level in the menu tree	Press the button.
Navigate to the top level setup menu	Press the button. Repeat until you are in the top level setup menu.

To reset all settings to their factory defaults:

1. In the top level setup menu, select System, then select Miscellany.
2. In the Miscellany menu, select Defaults: RESET.
   All settings are reset to their factory defaults.

NOTE The factory default for the items in the AES setup menu is SRC ON. Both local and remote control require these items to be set to SRC OFF. If you reset to defaults, be sure to manually set these items back to OFF (you cannot adjust these settings remotely).

Lucid ADA 88192 Converter Settings for Remote Control

You must configure the following settings to control the converter remotely. Any setting not listed here either has no effect with the application or can be set through the audio preferences of the application.

Menu	Menu Item	Comment
ADAT	ADAT INs: SRC ON ADAT INs: SMUX OFF	
AES	AES IN1+2: SRC OFF AES IN3+4: SRC OFF AES IN5+6: SRC OFF AES IN7+8: SRC OFF	
Analog Analog INs: SoftClip	IN1+2: SoftClip OFF IN3+4: SoftClip OFF IN5+6: SoftClip OFF IN7+8: SoftClip OFF	
Meter	Clip Detect: 3	3 is the recommended setting
System Miscellany	Route Unit: 8	8 is the recommended setting

Lucid ADA 88192 Converter Settings for Local Control

You must configure the following settings to control the converter locally. Any setting not listed here either has no effect with the application or can be set to any of the values available for it.

Menu	Menu Item	Comment
ADAT	ADAT INs: SRC ON ADAT INs: SMUX OFF	
AES	AES IN1+2: SRC OFF AES IN3+4: SRC OFF AES IN5+6: SRC OFF AES IN7+8: SRC OFF	
Analog Analog INs: SoftClip	IN1+2: SoftClip ON IN3+4: SoftClip ON IN5+6: SoftClip ON IN7+8: SoftClip ON	
Analog Analog INs: Gain	set each input channel to a value in the range -95.5 to +31.5 dB	
Analog Analog OUTs: Level	set either -10 or +4 for each output channel	
Meter	Clip Detect: 3	3 is the recommended setting
Route	For analog audio: AES INs --> ADAT OUTs Analog INs --> AES OUTs AES INs --> Analog OUTs	If these options do not appear, verify that Route Unit (in the System, Miscellany menu) is set to 8.

Menu	Menu Item	Comment
	For digital audio: AES INs --> ADAT OUTs AES INs --> AES OUTs AES INs --> ANALOG OUT	
Sync	Internal OFFExternal AES 1+2	External AES 1+2 is the recommended setting.
System Miscellany	Route Unit: 8	

Audio Keywords in the Visual Effects and Finishing Configuration File

There are two keywords in the software initialisation file (by default, *init.cfg*) that must be uncommented and set to the correct values to ensure Discreet Native Audio works properly. The first, Audiodevice, enables Discreet Native Audio. The second, MidiDevice, determines whether control of the Lucid converter is remote or local.

NOTE This does not apply to Lustre.

Keyword:	Setting:
Audiodevice	AJA
MidiDevice	If you are using local control of the converter, comment out this keyword. If you are using remote control of the converter, uncomment the keyword, set the serial port parameter to /dev/ttyS1 and leave all other parameters set to their default value.

For additional information on these keywords and help setting them, see the *Autodesk Visual Effects and Finishing Configuration File Reference Guide*.

Index

A

air conditioning, requirements 6
AJA breakout box 25
AJA HD5DA 25
AJA OEM-2K board 25
archive device, configuring 17
archive storage, connecting 17
ATTO fibre channel adapter, configuring 17
audio
    configuration keywords 36
    Discreet Native Audio 31
    hardware components 32
    keywords in software initialisation file 36
    wiring workflow 31
Audiodevice keyword 36
Autodesk Control Surface
    assigning an IP address 20
    configuration file 22
    connecting 18

B

broadcast monitor, wiring 25–26

C

cables
    VTR control 27
    VTR emulation control 29
calibration
    monitor 15
configuring
    archive device 17
    Lucid ADA 88192 converter 33
connecting
    archive storage 17
    audio 31
    fibre channel adapter 17
    Infiniband 16
    network 15
    storage 16
    video I/O components 26
    video I/O devices 26
    Wire network 15
connecting peripherals
    workflow 13
connection diagram
    HP xw8400 13
control surface
    Autodesk Control Surface, connecting 18
customer support
    contacting 2

D

Discreet Native Audio 31
Distribution amplifier 25
documentation, set of guides 1

E

emulation, setting up VTR 28

F

fibre channel adapter, configuring 17

G

gigabit Ethernet card, connecting 15
graphics board 25
graphics monitor 25

H

hardware configuration guidelines 6

I

Infiniband, connecting 16
initialisation file keywords, audio 36

K

keyboard, connecting 14
keywords
    audio 36
    Audiodevice 36
    MidiDevice 36

L

LCD graphics monitor 25
Lucid Converter ADA 88192 32

M

memory requirements 6
MidiDevice keyword 36
monitor 25
    calibration 15
    connecting 14
mouse, connecting 14

N

network, connecting 15
notation conventions 2
NVIDIA Quadro FX 5600 graphics board 25
NVIDIA Quadro SDI board 25

P

peripherals
    monitor 14
power, requirements 6

R

RS-422 control cable 29

S

SDI board 25
software initialisation file, audio keywords 36
storage, connecting 16
support
    contacting 2

T

tablet, connecting 15

V

video hardware components 25
video I/O, wiring 25–26
video wiring 26
VTR
    control cable 27
    emulation control cable 29
    emulation, setting up 28
VTR, connecting 26

W

Wire network, connecting to 15
wiring video I/O and broadcast monitor 25–26
workflow, audio wiring 31
workflow, hardware setup and software installation 3, 8